vast, and the leaven is so small, that organized effort on the part of leaders in scientific work might hasten the movement.

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THE SECOND part of Prof. Conway MacMillan's paper on "the three months course in botany" appears in *Education* for April. Had we anticipated another installment, we should have avoided a premature criticism, even inferentially, of his views, which are shown to be essentially in accord with those of the GAZETTE, ante, p. 120.

CURRENT LITERATURE.

Trelease on Epilobium.[1]

This is one of the most complete and satisfactory monographs we have seen. The genus is one of most perplexing character, for the species intergrade interminably. The author has wisely restrained himself from acknowledging as species all the forms that have been described as such, but he has felt compelled to publish several new ones. Not only is the geographical distribution of the species briefly considered, but the biological features connected with means of vegetative propagation, pollination, and dissemination, are noticed with that wealth of information and literature known to be in the possession of the author. The range is that of Gray's Synoptical Flora, here shown to contain 38 species of Epilobium. The new species are E. ursinum, E. holosericeum, E. delicatum, and E. clavatum, the first two from California, the others from the extreme N. W. states. Fourteen of the species admitted are those of Haussknecht. It would be impossible here to enumerate the changes in nomenclature involved by this monograph, as there has been such a confusion of names that only the monograph itself can make them clear. The names as they appear in Watson's Bibliographical Index are not very materially changed, but the separation of unrecognized species by Haussknecht has added many new names to that list. The illustration of every species is a very valuable feature of the work; and this leads us to remark, that accurate figures should be more extensively used in such monographs; for however faulty the text may be, good figures are records of facts that cannot well change, and are only second in value to the plants themselves.

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[1] TRELEASE, WILLIAM.—The species of Epilobium occurring north of Mexico: 50 pp. 48 plates: 8 vo. [Reprinted from second annual report of the Mo. Bot. Garden: issued April 22, 1891.]

Baillon's "Histoire des Plantes."

The tenth volume of this great work, bearing the imprint of 1891, is at hand, and the American botanist always turns over its handsome pages with the greatest interest to discover the changes which affect his own plants. The present volume contains 476 pages, with 335 figures in the text, the families treated being Bignoniaceæ, Gesneriaceæ, Gentianaceæ, Apocynaceæ, Asclepiadaceæ, Convolvulaceæ, Polemoniaceæ, Boraginaceæ, and Acanthaceæ. In a somewhat hasty examination the following facts were noted with reference to North American plants:

GENTIANACEÆ.—*Frasera* Walt. is included under *Swertia* L.

APOCYNACEÆ.—Our single species of *Trachelospermum* is referred to *Forsteronia* G. F. W. Mey.; while the genus *Gelsemium* is included, having been transferred from Loganiaceæ.

ASCLEPIADACEÆ.—A wholesale merging of genera is made, by including *Gomphocarpus*, *Asclepiodora*, *Anantherix*, *Podostigma*, *Schizonotus*, and *Acerates* under *Asclepias*. *Vincetoxicum* Mœnch is placed under *Cynanchum* L.

CONVOLVULACEÆ.—*Calystegia* R. Br. is restored to generic rank, and *Bonamia* Dup.-Th. replaces *Brewеria* R. Br.

POLEMONIACEÆ.—*Collomia* Nutt. is restored to generic rank, and all that was formerly *Gilia* becomes *Navarretia* Ruiz & Pav. Thus the name of one of our largest North American genera disappears, and a large harvest of species awaits the writer who first lists our species of *Navarretia*. How *Collomia* is kept distinct is not at all clear to the writer.

BORAGINACEÆ.—As is to be expected, the greatest changes are to be found in this much worked over group, and they are exceedingly hard to follow in any hasty review. However, the following facts seem clear: The whole family *Hydrophyllaceæ* appears under *Boraginaceæ*, and a well known ordinal name thus disappears. *Echinospermum* Swartz becomes *Lappula* Mœnch. *Eritrichium* Schrad. again appears with a part of its former species. *Cryptanthe* Lehm. also contains some former Eritrichiums. *Piptocalyx* Torr. stands for *Krynitzkia* Fisch. & Meyer. Professor Greene's genera *Eremocarya*, *Oreocarya*, *Allocarya*, and *Sonnea* are admitted, containing species variously referred heretofore to *Eritrichium* and *Krynitzkia*. *Plagiobothrys* Fisch. & Mey. is maintained, and includes *Echidiocarya* Gray. *Hydrophyllum* becomes *Hydrophyllon*. *Nemophila* Nutt. is merged under *Ellisia* L. *Draperia* Torr. goes to *Phacelia* Juss. With such an upheaval in our generic lines it will be a work of considerable difficulty to properly locate our species.

ACANTHACEÆ.—*Gatesia* Gray is reduced to *Dianthera* L.

Minor Notices.

THE STUDY of aquatic plants is rapidly increasing. Since Dr. H. Schenck published his two large papers upon the anatomy and biology of these forms, a French botanist, Mr. C. Sauvageau has given some very exact observations upon the anatomy of several aquatic monocotyledons. It may be of interest to botanists in this country to know these works, which certainly encourage further studies. They are all published in *Journal de Botanique* and the titles are as follows: Sur un cas de protoplasme intercellulaire (1889); Sur la racine du *Najas* (1889); Contributions à l'étude du système mécanique dans la racine des plantes aquatiques: Les *Potamogeton* (1889); *ditto*: *Zostera, Cymodocea* et *Posidonia* (1889); Observations sur la structure des feuilles des plantes aquatiques: *Zostera, Cymodocea* et *Posidonia* (1890); Sur la feuille des *Hydrocharidées* marines: *Enhalus, Thalassia* et *Halophila* (1890): Sur la structure de la feuille des genres *Halodule* et *Phyllospadix* (1890); Sur la tige des *Zostera* (1891).—T. H.

PROFESSOR F. LAMSON-SCRIBNER is the author of a small, but very readable and useful book on fungous diseases of the grape and other plants, just published by J. T. Lovett Co., of Little Silver, N. J. The diseases of the grape have recently been receiving very large attention, and from no one more than Professor Scribner. He, therefore, speaks first-hand and does not merely compile current information. Other diseases treated are those of the apple, pear, peach, plum, etc. The diseases are not only described in a simple and recognizable way, but the best known treatment is suggested. The book should be in the possession of every horticulturist.

THE THIRD biennial report of the California State Board of Forestry, for the years 1889–90, has just appeared. It is a voluminous pamphlet of over 200 pages, but is full of information concerning the forests of California. The well-known botanist, Mr. J. G. Lemmon, has collected a vast array of facts, and his descriptions are always graphic. An invaluable part of the report will be found in the 30 artotype plates, representing the general habit of characteristic trees and sometimes even their detailed structures. These photographic reproductions are always useful, for they represent a set of facts of permanent value, no matter how opinions concerning them may change.

DR. ROLAND THAXTER has issued a paper on the Connecticut species of Gymnosporangium, as Bulletin 107 of the Connecticut Agricultural Experiment Station. A new species is characterized, viz. *G. nidus-avis*, the specific name referring to a "birds-nest" distortion it produces on Juniperus Virginiana. The Roestelia stage has been observed on quince and service-berry.

PROF. L. H. BAILEY has found time to write "The Nursery-book," a complete guide, not to the domestic matters which the first glance at its title will suggest, but to the multiplication and pollination of plants. The seven chapters have the following titles: Seedage, Separation; Layerage; Cuttage; Graftage; The Nursery List; Pollination. The book must be of great value to nurserymen, but it is also full of information and suggestion to the botanist, who has to teach, or who wants to experiment. It is published by the Rural Publishing Co. of N. Y. City.

MR. JOHN DONNELL SMITH has just issued the second part of his very handsome "Enumeratio Plantarum Guatemalensium." This part contains 100 pages of text, printed only on one side, and gives a full enumeration of all the Guatemalan plants collected by Mr. Smith and Baron von Türckheim since the appearance of the previous part. Certain groups have been distributed among specialists of this country and Europe, and the enumeration indicates a large number of new species.

FLORA FRANCISCANA, Part I, is the title of a new publication by our indefatigable friend, Professor E. L. Greene. As the author remarks on the title-page, this is "An attempt to classify and describe the vascular plants of middle California." Twenty orders are presented, beginning with Leguminosæ and ending with Caryophylleae, the obsolete distinction between Polypetalae and Apetalae being disregarded. One expects to find all sorts of departures from ordinary methods of classification, but the vast array of facts that have been collected by the direct field observation of a keen observer make this publication a very valuable one. Probably there always will be differences of opinion as to the drawing of ordinal, generic, and specific lines, but the facts, thus pigeon-holed according to the fancy of the observer, are permanent things. It would be impossible, in this notice, to call attention to the changes proposed, for this pamphlet of 128 pages contains in almost every page things interesting enough to be noted. However, Professor Greene's views are sufficiently well known to need no explanation. This part can be obtained for 75 cents, and it should be in the hands of every student of the Pacific slope flora.

THE CURRENT MEMOIR (vol. ii, no. 3) of the Torrey Botanical Club is by Mr. Theodore Holm, who presents a paper entitled "Contributions to the knowledge of the germination of some North American plants," handsomely illustrated by 15 plates. This paper deals with the description of the germination and early stage of growth and development of the rhizomes of certain plants. It must be said that

Mr. Holm is doing a very much needed piece of work, and such contributions to our knowledge of a very much neglected subject are exceedingly welcome. It is this kind of work which is laying up in store for the future systematist a set of facts that will make it more possible to present a natural classification.

FOUR ADDITIONAL PARTS (55 to 58) of *Die natürlichen Pflanzenfamilien* have lately appeared. No. 55 contains the beginning of the Cruciferae, by Prantl, in which the generic lines in vogue in America are maintained. No. 56 contains Cunoniaceae, by Engler; Pittosporaceae, by Pax; and Myrothamnaceae, Hamamelidaceae, Bruniaceae and Platanaceae, by Niedenzu. Nos. 57 and 58 contain the conclusion of Cruciferae, by Prantl; Moringaceae, Tovariaceae and Capparidaceae by Pax; Sarraceniaceae and Nepenthaceae by Wunschmann; Droseraceae by Drude; and Resedaceae by Hellwig.

A CATALOGUE of the "Flowering plants and higher cryptogams," both native and introduced, found within about 30 miles of Hanover, N. H., has just been published by Professor Henry G. Jesup, of Dartmouth College. An outline map is included, and about 60 pages of neat text present the names and habitats of the plants of a very interesting botanical region.

THE Trans. Kansas Acad. of Science, vol. xii (1889–90) is just at hand, and contains the following papers of botanical interest: Characteristic sand-hill flora (2 pp.), M. A. Carleton; Botanical notes for 1889 (2 pp.), J. H. Carruth; Methods of collecting, cleaning and mounting diatoms (2 pp.), Gertrude Crotty; Distribution and ravages of the hackberry branch knot (1 p. and 2 plates), Germination of Indian corn after immersion in hot water (2 pp. and 4 pp. of tables), Observations on the nutation of sunflowers, (3 pp. and 40 tables), W. A. Kellerman; Notes on sorghum smuts (2 pp. and 1 plate), Kellerman & Swingle; Evolution in leaves (4 pp. and 1 plate), Mrs. W. A. Kellerman; Radiation of heat from foliage (1 p.), A. G. Mayer; List of plants from Cherokee Co., Texas (2 pp.), Mrs. A. L. Slosson; Periodicity in plants (6 pp.), Additions to the flora of Kan. (14 pp.), B. B. Smyth; The union of Cuscuta glomerata with its host (1 p. and 1 figure), W. C. Stevens; First addition to the list of Kansas Peronosporaceae (5 pp.), W. T. Swingle; On the sugars of watermelons (1 p.), J. T. Willard.